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A NEW *LIOLAEMUS* (SAURIA, IGUANIDAE) FROM THE HIGH ANDES OF ARGENTINA, WITH ECOLOGICAL COMMENTS

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ABSTRACT

A high elevation Andean *Liolaemus* is described as a new species. It appears to be related to the *elongatus* group, but differs from all members of the group by having generally lower scale counts. Comments are made concerning the ecology of the species.

INTRODUCTION

Liolaemus is a large (over 50 described species), ecologically diverse genus of iguanid lizards inhabiting Austral, Patagonian, and Andean regions of South America (Donoso-Barros, 1966). Although the genus is widely distributed many species are localized endemics with restricted ranges (Cei, 1974; Donoso-Barros, 1966, 1971; Donoso-Barros and Cei, 1971). The species described here seems to conform to the pattern of restricted or local distribution because it was only found in a small region of the Cuesta de Minas Capillitas, Catamarca. Catamarca Province is herpetologically poorly known; Koslowsky (1895) reported initially on the herpetofauna of the region, but little additional work has been done in the province. Hellmich (1964) described *Liolaemus robertmertensi* from the mountains in the vicinity of Belén, Catamarca. The new species also comes from the Cordillera de Ca-

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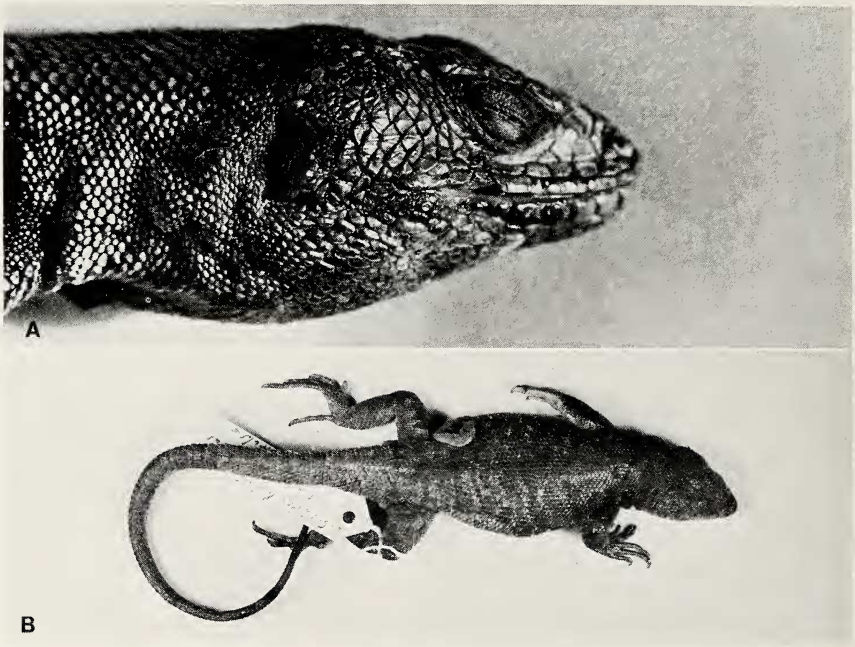

Fig. 1.—Lateral view of head (A) and dorsal view of body (B) of holotype of *Liolaemus capillitas*.

tamarca; however, it was found in the vicinity of Andalgalá (approximately 90 air km east of Belén).

This study is based on material collected during 1973–1974 and 1974–1975 while I was involved in the Desert Scrub Subprogram of the International Biological Program.

Liolaemus capillitas, new species

Holotype.—Carnegie Museum of Natural History (CM) 70114, an adult male from 5 km S of Minas Capillitas, about 3,900 m, Provincia de Catamarca, Argentina, collected 5 January 1975 by Arthur C. Hulse.

Paratopotypes.—CM 70115–70147.

Diagnosis.—A large *Liolaemus* possibly of the *elongatus* group, with moderately long hind limbs; dorsal scales triangular, keeled, not pointed; preanal pores, three or four; dorsum brownish to black, without distinct pattern; differing from other members of the *elongatus* group in possessing generally lower scale counts around the body, 58–

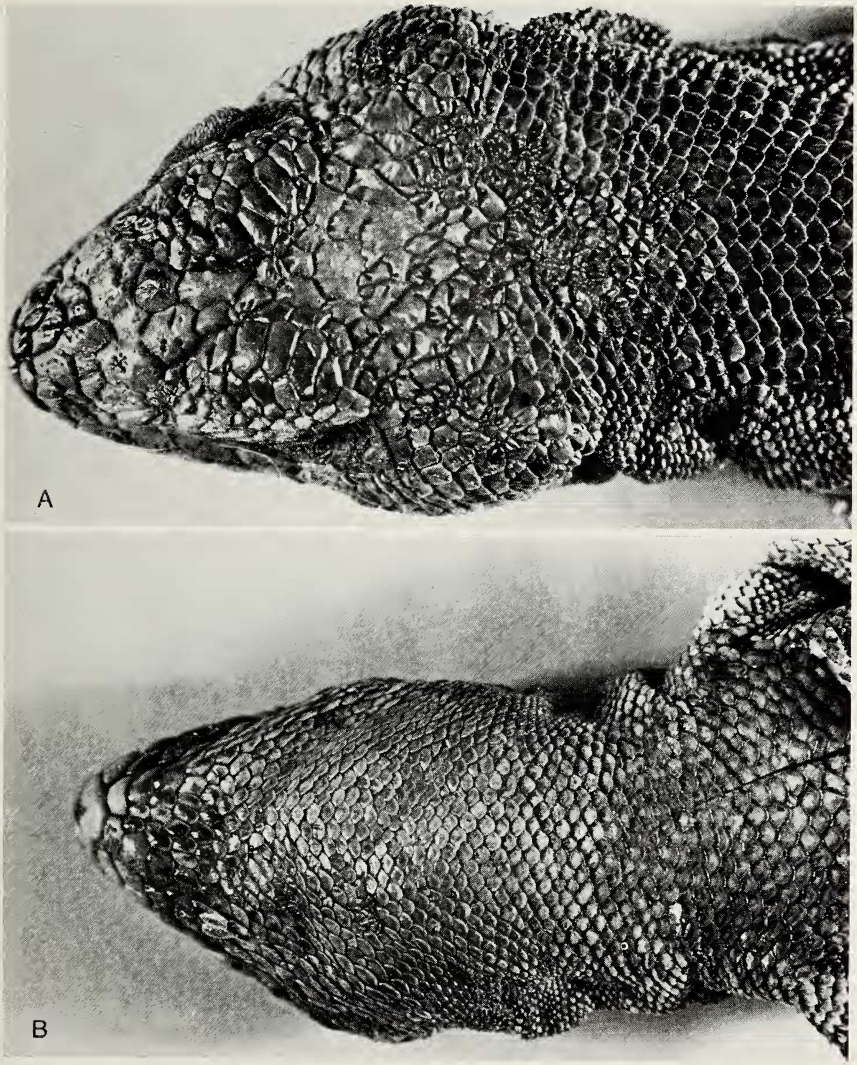

Fig. 2.—Dorsal view (A) and ventral view (B) of head of holotype of *Liolaemus capillitas*.

67; fewer supralabials, five to seven; and fewer subdigital lamellae on the fourth toe, 24–28.

Description of the holotype.—Size large, general form robust; adpressed hindlimb reaching to just behind the ear; tail one and one-half times snout-vent length; head somewhat shortened, 1.3 times as long as wide (Fig. 1). Dorsal head scales variable in

Table 1.—*Comparison of scale counts of* Liolaemus capillitas *with members of the* Liolaemus elongatus *complex. Data on* elongatus *complex are from Cei (1974). Data on* L. capillitas *represent mean, range, and standard error of the mean. NA = not available in Cei (1974). N = 34 for* L. capillitas.

Character	*Liolaemus capillitas*	*Liolaemus elongatus elongatus*	*Liolaemus elongatus petrophilus*	*Liolaemus austromendocinus*
SAB	61.5 (58–67 ± 0.47)	72–90	75–92	76
Supralabials	5.8 (5–7 ± 0.11)	7–8	8	7
Infralabials	5.5 (5–7 ± 0.10)	NA	NA	6
Subdigital lamellae	26.0 (24–28 ± 0.22)	27–30	25–32	28
Preanal pores	3.4 (3–4 ± 0.18)	NA	NA	3

size, numerous, relatively small, usually smooth, and slightly convex; temporals weakly keeled. Rostral 2.5 times as wide as high, visible from above. One azygous frontal present; interparietal slightly smaller than parietals; three or four enlarged supraoculars; subocular greatly extended, separated from supralabials by a single row of scales; six supralabials; five infralabials. Supralabials, infralabials, and adjacent scales dotted with small dark pits. Mental 2.5 times as wide as high; postmentals in two divergent rows of five scales each (Fig. 2). Ear opening oval, twice as high as wide, bordered anteriorly by moderately large scales and by granular scales along the other margins. Sides of neck with granular scales, antehumeral fold present. Dorsal scales moderate in size, imbricate, not pointed, conspicuously keeled. Ventral scales inbricate, smooth, slightly larger than dorsals. Lateral scales imbricate, diagonally keeled, smaller than either dorsals or ventrals, and often associated with small satellite scales, the distribution of which is variable. Dorsal caudal scales rectangular, strongly keeled, imbricate, and pointed. Ventral caudal scales smooth, rectangular, imbricate, directed diagonally inward, of a size similiar to the dorsal caudals. Arm scales variably keeled, being most heavily keeled in the dorsal antebranchial region. Thigh scales large and keeled anteriorly and small and granular posteriorly. Scales around the body 61; 21 dorsal scale rows contained in the length of the head; 27 fourth toe subdigital lamellae; three preanal pores.

Dorsal ground color brownish in the preserved animal. Dorsal pattern a series of vague transverse bars produced by lighter colored scales interspersed among the dark background scales. A definite darkening of the body occurs along the anterior sides and along the upper surface of the arm. Head scales brown with some dark spotting. Ventral coloration light bluish gray. Tail light brown, lacking a pattern.

Measurments of the holotype.—Snout-vent length, 89 mm; tail length, 143 mm; head length, 22 mm; head width, 17 mm; hindleg length, 53 mm; foreleg length, 33 mm.

Variation.—The type-series consists of 11 adult males, 16 adult females, and seven immatures. The sexes are easily distinguished by the presence of preanal pores in males. General body form in the females is more slender; and the head is less massive.

Variation in scale counts is presented in Table 1. The azygous frontal is absent in some individuals. The divergent postmental scale rows vary from three to five scales per row. In some individuals the temporal scale keeling is absent or greatly reduced. Ground color in some animals is black and in some the transverse bars are absent. Most mature females possess slightly reddish areas in the preanal region and along the ventral surface of the thighs. It is possible that the coloration may be associated with specific sexual condition, such as the breeding coloration exhibited by female *Crotaphytus* and *Cophosaurus*.

Table 2.—*Stomach analysis of* Liolaemus capillitas *by percent volume and number of food items. N = 28.*

Food item	Number of items	Percent volume
Formicidae	417	59.7
Coleoptera	13	12.9
Orthoptera	6	8.0
Hemiptera	5	7.0
Nematodes	114	4.0
Lepidoptera	4	3.6
Plant matter	—	3.3
Diptera	3	1.5

Systematic remarks.—Because of the large number of species in the genus and the scant taxonomic information available for many of the species exact relationships are difficult to determine; however, *L. capillitas* appears to be most closely related to the Patagonian lizards of the *elongatus* group (*L. elongatus elongatus* Koslowsky, *L. e. petrophilus* Donoso-Barros, and *L. austromendocinus* Cei). It differs from the above species in having generally lower scale counts (Table 1). *Liolaemus capillitas* is similiar in general appearance and body form to descriptions of *L. austromendocinus,* but is more robust than either form of *L. elongatus* and lacks the distinctive dorsal pattern usually found in *L. elongatus*. It occurs farther north than any of the above species.

Ecological remarks.—Liolaemus capillitas is an inhabitant of high elevations. The type-series was collected at approximately 3,900 m and specimens were never observed below 3,500 m. Typical habitat is steep rocky hillsides covered with bunch grass, scattered low shrubs, and small cacti. Within this general habitat *L. capillitas* is almost entirely restricted to rocky cliff faces and exposed road cuts. During mid-day (1000 to 1600 hr) lizards can be seen sunning on the exposed rocks. When disturbed they attempt to escape into the cracks and crevices in the rocks. The restriction of activity to mid-day is most likely a function of the exposure of the rock faces where the lizards were found. During early morning and late afternoon the faces were in shadow and offered no opportunity for behavioral thermoregulation.

Stomach contents of 28 lizards were examined (Table 2). Ants composed almost 60% of the total volume and represented about 80% of the individual food items ingested. Coleoptera, Orthoptera, and Hemiptera made up a significant percentage of the remaining items. Plant material (probably incidentally ingested) represented 3.3% of the total volume. The lizards were heavily parasitzed by gastric nematodes. A total of 114 nematodes was found in the stomachs of the lizards and

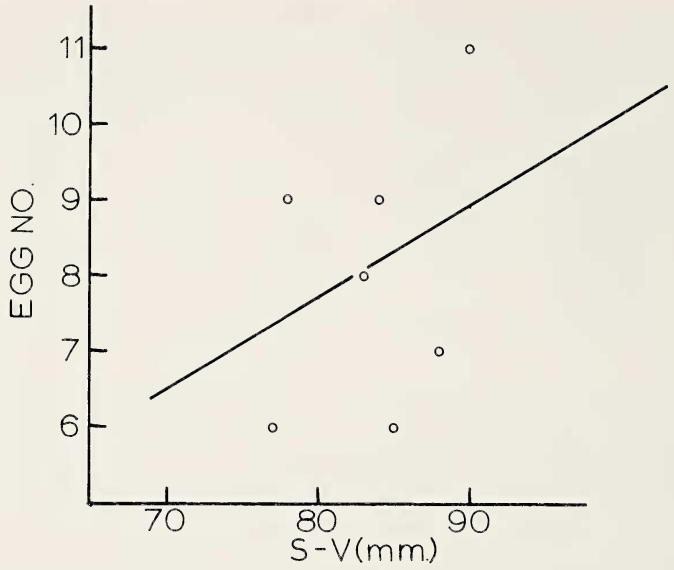

Fig. 3.—Relationship between snout-vent length and clutch size in *Liolaemus capillitas*.

comprised 4% of the total stomach volume. Only one lizard was free of the parasites.

Seven females contained six to 11 (mean = 8.0) oviducal eggs. There appears to be a trend for larger lizards to have larger clutches and for the smallest clutches to be found in the smallest lizard (Fig. 3). Specimens collected in November and January contained oviducal eggs, whereas those collected in February were spent, and contained at most small corpora lutea. The lizards seem to be viviparous as the oviducal eggs from November and January samples contained developing embryos. The marked absence of females bearing oviducal eggs in the February sample poses some interesting questions. Are the lizards truly viviparous or do they simply retain the eggs in the oviducts for varying lengths of time before oviposition? The relatively small size difference between embryos from the November and January samples suggests a slow developmental rate if viviparous. It would seem highly unlikely that the eggs could have developed to parturition between 5 January and 12 February. This suggests that the eggs are merely retained in the oviducts for a period of time before deposition. Further support for this explanation of the reproductive strategy comes from the heavy, leathery eggshell that is identical to that of oviparous forms. Furthermore, hatchlings were not present in the February sam-

ple and would have been expected to be in the sample if the lizards were indeed viviparous and had given birth. The phenomenon of egg retention has been noted in other high elevational lizards such as *Sceloporus scalaris* (Newlin, 1976) and *Anolis cybotes* (Huey, 1977).

The largest immature male collected was 70 mm SVL and the smallest mature male was 79 mm. The largest immature female was 72 mm and the smallest mature female was 75 mm. The largest individual collected was a 93 mm female.

Etymology.—The specific epithet *capillitas* refers to the locality where the type-series was collected.

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LITERATURE CITED

CEI, J. M. 1974. Revision of the Patagonian iguanids of the *Liolaemus elongatus* complex. J. Herpetol., 8:219–229.

DONOSO-BARROS, R. 1966. Reptiles de Chile. Ed. Univ. Chile, Santiago, 1–485 + i–cxlvi pp.

———. 1971. A new *Liolaemus* from Neuquen (Argentina). Herpetologica, 27:49–51.

DONOSO-BARROS, R., AND J. M. CEI. 1971. New lizards from the volcanic Patagonian plateau of Argentina. J. Herpetol., 5:89–95.

HELLMICH, W. 1964. Über eine neue *Liolaemus* Art aus den Bergen von Catamarca, Argentinien (Reptilia, Iguanidae). Senckenbergiana Biol., 45:505–507.

HUEY, R. B. 1977. Egg retention in some high altitude *Anolis* lizards. Copeia, pp. 373–375.

KOSLOWSKY, J. 1895. Batracios y reptiles de Rioja y Catamarca. Rev. Mus. La Plata, 6:357–370.

NEWLIN, M. E. 1976. Reproduction in the bunch grass lizard, *Sceloporus scalaris*. Herpetologica, 32:171–184.